

# MAD Mount Arden Land System

Moderately steep to steep hillslopes near the western edge of the Southern Flinders Ranges between Saltia and Wyacca Bluff.

- Area:** 77.8 km<sup>2</sup>
- Geology:** Fine sandstones and siltstones of the Willochra Formation, with siltstones of the Tapley Hill Formation.
- Topography:** Moderately steep to steep hills with slopes of up to 60%. About 15% of the system is undulating to gently rolling with slopes of less than 15%. Rocky outcrops are sporadic and extensive in places on steeper slopes. Valley floors are generally narrow, but there are minor areas with gently undulating valley floors.
- Elevation:** 320 m in the north, to 700 m adjacent to the Dutchman's Stern in the mid section of the System
- Relief:** Generally less than 100 m, and less than 30 in places
- Annual rainfall:** 295 – 450 mm average
- Soils:** The soils are predominantly shallow sandy loams to loams over sandstone, siltstone or dolomite basement rocks.

#### Main soils:

- L1a** Shallow loam on rock - finer grained rocks such as siltstones  
**L1b** Shallow sandy loam on rock - coarser grained rocks such as sandstones  
**A2** Shallow calcareous loam - dolomites and calc-siltstones  
**C2** Gradational loam on rock

#### Minor soils:

- D1** Loam over red clay on rock  
**D4** Deep loam over pedaric red clay  
**D7** Loam over poorly structured red clay on rock  
**M2** Deep gradational clay loam  
**RR** Rock outcrop

- Summary:** The Mount Arden Land System comprises rolling to steep low hills and hills with widespread rocky outcrops. Only about 15% of the system is potentially arable, and much of this is too steep for regular cropping. The soils are sandy loams to loams, sometimes calcareous, and generally shallow over basement rock. Deeper soils occur on narrow footslopes, fans and valley floors. The soils are generally moderately fertile and well drained. Most land is too steep or rocky for uses other than grazing, and much of the potentially arable is too susceptible to water erosion for regular cropping.



**Soil Landscape Unit summary:** 18 Soil Landscape Units (SLUs) mapped in the Mount Arden Land System:

SLU	% of area	Main features #
AAC	18.0	Low hills and hills formed on interbedded sandstones and siltstones of the Willochra Formation.
AAD	9.6	There is significant rocky outcrop and surface stone, particularly on steeper slopes. Watercourses
AAE	8.9	occupy narrow valleys.
AAI	6.2	<b>AAE</b> Rolling low hills with slopes of 10-30% and relief of less than 30 m
AAK	22.9	<b>AAD</b> Steep rocky low hills with slopes of 30-60%, sometimes 75%, and relief up to 90 m.
		<b>AAE</b> Steep rocky hills with slopes of 30-60% and relief exceeding 90 m.
		<b>AAI</b> Rolling low hills with as for AAC, but with eroded watercourses.
		<b>AAK</b> Steep rocky hills as for AAE, but with eroded watercourses.
		Main soils: <u>shallow sandy loam on rock</u> - <b>L1b</b> (E) <u>shallow loam on rock</u> - <b>L1a</b> (C-E), <u>shallow calcareous loam</u> - <b>A2</b> (L), <u>gradational loam on rock</u> - <b>C2</b> (M), and <u>outcropping rock</u> - <b>RR</b> (M). Shallow soil profiles, steep slopes and rockiness restrict land use to <u>grazing or conservation</u> over most of these landscapes.
ADD	1.8	Low hills and hills formed on calc-siltstones of the Tapley Hill and Willochra Formations, and
ADH	0.7	Skillogalee Dolomite. There is significant rocky outcrop and surface stone, particularly on steeper
ADI	3.1	slopes. Watercourses occupy narrow valleys.
ADJ	8.0	<b>ADD</b> Steep low hills with slopes of 30-60% and relief up to 100 m.
ADK	6.1	<b>ADH</b> Rolling rises and low hills with slopes of 10-30% and relief of less than 50 m.
		<b>ADI</b> Moderately steep to steep ridges with slopes of 20-50%, relief of up to 100 m, some
		watercourse erosion and minor scalding.
		<b>ADJ</b> Steep low hills with slopes of up to 50% and relief to 100 m. About 15% of the landscape
		comprises gentler slopes of 10-20%.
		<b>ADK</b> Steep hills with rounded more gently sloping crests and upper slopes. Steeper slopes are
		up to 60%, grading to 10% on broad crests. Relief is up to 150 m.
		Main soils: <u>shallow loam on rock</u> - <b>L1</b> (E), <u>shallow calcareous loam</u> - <b>A2</b> (L), <u>gradational loam on rock</u> - <b>C2</b> (L), <u>loam over red clay on rock</u> - <b>D1</b> (L) and <u>outcropping rock</u> - <b>RR</b> (M). Shallow soil profiles, steep slopes and rockiness restrict land use to <u>grazing or conservation</u> over most of these landscapes.
AYk	1.3	Steep slopes formed on Brachina Formation shales. Slopes are 25-75%. There is significant surface
		stone, scree and eroded patches. Watercourses are commonly eroded.
		Main soils: <u>shallow loam on rock</u> - <b>L1</b> (E) and <u>shallow calcareous loam</u> - <b>A2</b> (E). This land is highly
		susceptible to erosion, and is too steep for any uses other than grazing.
EFB	1.1	Rises and gentle slopes formed on fine grained rocks of the Tapley Hill and Willochra Formations.
EFG	2.2	<b>EFB</b> Undulating slopes and rises, 2-5% slope.
EFI	2.2	<b>EFG</b> Gentle slopes of 1-3% with creek flats and eroded watercourses.
EFII	2.5	<b>EFI</b> Rolling rises with slopes of 10-20% and some watercourse erosion.
		<b>EFII</b> Rolling rises with slopes of 10-20% and significant watercourse erosion.
		Main soils: <u>shallow loam on rock</u> - <b>L1</b> (E), <u>shallow calcareous loam</u> - <b>A2</b> (E) and <u>gradational loam on rock</u> - <b>C2</b> (L-C). These slopes are semi-arable, although many soils are shallow and stony, with limited
		waterholding capacity. Much of EFI and EFII is too steep for regular cropping.
EHG	1.5	Rises formed on siltstones and fine sandstones of the Willochra Formation.
EHH	1.8	<b>EHG</b> Lower slopes, pediments and low rises with slopes of 1-3%.
		<b>EHH</b> Undulating slopes and rises with slopes of 4-12% and relief up to 30 m.
		Main soils: <u>loam over poorly structured red clay on rock</u> - <b>D7</b> (E), <u>shallow loam on rock</u> - <b>L1</b> (E) and
		<u>shallow calcareous loam</u> - <b>A2</b> (E), with <u>deep loam over pedaric red clay</u> - <b>D4</b> (L-M) on lower lying
		ground. Most of this land is arable, although some of the soils are shallow and stony. Watercourses
		are commonly eroded and need protection.
EUH	2.1	Undulating valley floor with stony rises formed on Tapley Hill Formation siltstones and associated
		alluvium. Slopes are 5-15% Watercourses are generally eroded.
		Main soils: <u>shallow calcareous loam</u> - <b>A2</b> and <u>shallow loam on rock</u> - <b>L1</b> on stony rises, with <u>deep</u>
		<u>gradational clay loam</u> - <b>M2</b> and <u>deep loam over pedaric red clay</u> - <b>D4</b> on alluvium. The gentler slopes
		are arable, but run-on from adjacent steeper slopes predisposes this landscape to erosion.

# PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(D) Dominant in extent (&gt;90% of SLU)

(V) Very extensive in extent (60–90% of SLU)

(E) Extensive in extent (30–60% of SLU)

(C) Common in extent (20–30% of SLU)

(L) Limited in extent (10–20% of SLU)

(M) Minor in extent (&lt;10% of SLU)



**Detailed soil profile descriptions:**

- A2** Shallow calcareous loam (Paralithic, Hypercalcic / Supracalcic Calcarosol)  
Calcareous stony loam grading to soft or rubbly carbonate over weathering dolomite or calc-siltstone within 50 cm.
- C2** Gradational loam on rock (Calcic, Red Dermosol)  
Stony loam grading to a well structured red clay, calcareous at base forming in weathering siltstone between 50 and 100 cm.
- D1** Loam over red clay on rock (Calcic, Red Chromosol)  
Medium thickness loam to clay loam abruptly overlying a well structured red clay, calcareous with depth grading to weathering rock within a metre.
- D4** Deep loam over pedaric red clay (Calcic, Pedaric, Red Sodosol)  
Medium thickness loam over a finely structured crumbly red clay, calcareous with depth, grading to alluvium.
- D7** Loam over poorly structured red clay on rock (Calcic / Hypercalcic, Red Sodosol)  
Medium thickness sandy loam to clay loam abruptly overlying a coarsely structured, often dispersive red clay, calcareous with depth, grading to highly weathered quartzite or quartzitic shale.
- L1a** Shallow stony loam (Lithic, Leptic Rudosol OR Calcareous, Lithic, Leptic Tenosol)  
Shallow stony loam to clay loam overlying fine grained basement rock with or without soft carbonate in fissures.
- L1b** Shallow stony sandy loam (Lithic, Leptic Rudosol OR Calcareous, Lithic, Leptic Tenosol)  
Shallow stony sandy loam overlying sandstone with or without soft carbonate in fissures.
- M2** Deep gradational loam (Calcic, Red Dermosol)  
Thick clay loam grading to a well structured red clay, calcareous with depth, overlying deeply weathered rock or colluvial wash,.
- RR** Rock outcrop

**Further information:** [DEWNR Soil and Land Program](#)

